

Dr. Vikram Vishal

DST – INSPIRE Faculty, Indian Institute of Technology Roorkee

Formerly: DST – Fast Track Young Scientist, CSIR-Central Institute of Mine and Fuel Research, Dhanbad & Manager (Geology), Tata Steel, Jamshedpur

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RESEARCH THEME

An investigation on carbon dioxide sequestration in Indian coal seams (Graduated April, 2013)

First Graduate: IITB Monash Research Academy (Earth Sciences – IIT Bombay & Civil Engg – Monash)

KEY ACADEMIC PROJECTS

M.Sc.: *Petrophysical characterization of weak rocks and its applications, IIT Bombay (2009)*

B.Sc.: *Coalbed Methane: An Alternate Energy, CSIR – CIMFR, Dhanbad (2006)*

KEY ACADEMIC ACHIEVEMENTS (Best Five)

- **University Rank 1** (B.Sc., Geology Honours), University of Calcutta, Kolkata, 2007
- **All India Rank 2**, Joint Admission Test to M.Sc. in IITs (JAM), 2007
- **All India Rank 3**, Graduate Aptitude Test in Engineering (GATE); 99.6 percentile, 2009
- **Dr. Shyama Prasad Mookerjee Gold Medal and Corporation Bank Gold Medal** for Rank 1 in all subjects at Presidency College, Kolkata, 2007
- **CSIR-CPYLS Fellow**, 2001 - 09 (Scheme restricted to top 50 students in ICSE, CBSE and all State Board Examinations, 2001)

POSITION OF RESPONSIBILITY (Best Five)

- **Joint Secretary**, CAFET INNOVA Technical Society, Maharashtra State [2009 -]
- **President**, Society of Petroleum Geophysicists (SPG), IIT Bombay chapter [2010 - 11]
- **Academic Unit Representative**, Institute Research Scholars' Forum, IIT Bombay [2010 - 11]
- **General Secretary**, Department of Earth Sciences, IIT Bombay [2008 - 09]
- **Constituency Representative**, Presidency College Students Union, Kolkata [2006 - 07]

RESEARCH COMPETENCE & SKILLS

- **Experimental**
 - *Design and fabrication of Environment Cell for saturation experiments*
 - *Upgradation and utilization of Rock Triaxial set up for hydro-mechanical tests*
 - *Contribution to design and fabrication of Rock Tribometer*
- **Numerical**
 - *Reservoir studies using COMET 3 & COMSOL Multiphysics*
 - *Slope stability studies using FLAC/Slope, PLAXIS & Particle Flow Code*
 - *Soft computing using ANFIS, ANN and GRNN*

AWARDS AND RECOGNITIONS (Best Five)

- **Excellence in PhD Thesis Award**, IIT Bombay and **Best Thesis Oskar Award**, jointly from IIT Bombay Monash University Research Academy, 2013.
- **Research Experience in Carbon Sequestration**, enlisted in **top 5** early career professionals in the world (outside USA) for representation in Birmingham, Alabama, sponsored by Department of Energy, Govt. of USA, 2012.
- **Young Scientist Award**, Indian Science Congress Association, conferred during 98th Indian Science Congress, Chennai, 2011.
- **Best Outgoing Undergraduate Student Award** and **Student with Highest Scholastic Record Award**, Presidency College, Kolkata, 2007.
- **Delivered Invited Lectures:** Including invitations from Chairman, IPCC; European Commission (UK); Atlantic Council (USA) and Ministry of Earth Sciences (GoI).

PUBLICATIONS (Best Five)

1. **V. Vishal**, P. G. Ranjith, S. P. Pradhan, T. N. Singh, 2013, Permeability of sub-critical carbon dioxide in naturally fractured Indian bituminous coal at a range of down-hole stress conditions, *Engineering Geology* (Accepted) [Impact Factor: 1.977]
2. **V. Vishal**, L. Singh, S. P. Pradhan, T. N. Singh, P. G. Ranjith, 2013, Numerical modeling of Gondwana coal seams in India as coalbed methane reservoirs substituted for carbon dioxide sequestration, *Energy*, Vol 49, pp. 384-394. (**Best Paper ‘Oskar’ Award: IITB - Monash**) [Impact Factor: 4.107]
3. **V. Vishal**, P. G. Ranjith, T. N. Singh, 2013, CO₂ permeability of Indian bituminous coals: Implications for carbon sequestration, *International Journal of Coal Geology*, Vol 105, pp. 36-47.[Impact Factor: 3.157]
4. **V. Vishal**, P. G. Ranjith, T. N. Singh, 2013, Development of reconstituted Indian coals to investigate coal response to carbon dioxide exposure, *47th US Rock Mechanics / Geomechanics Symposium*, San Francisco, USA. ARMA – 737. [ERA Conf Rating: A*]
5. **V. Vishal**, S. P. Pradhan, T. N. Singh, 2011, Tensile strength of rock under elevated temperatures, *Geotechnical and Geological Engineering*, Vol 29, pp. 1127-1133.